

FIRST GRADE AIR AND WEATHER STUDY

CLASS: AIR AND WEATHER: AIR PRESSURE

Students will learn that air exerts pressure on all matter through a variety of hands-on experiments and teacher-led demonstrations.

Pre Activity:

Do!

Capturing Air

For this teacher demonstration, get a zip lock bag. Share observations on the bag's appearance and feel. Next, blow air (from your own lungs or a hair dryer) into the bag and lock it shut. Discuss how it's appearance and feel changes. Explain that the bag is full of air because air takes up space. Last, explain that the air feels trapped in the bag by the plastic walls and that it wants to go out where there is more room. Cut a small hole in the zip lock and press it so that the air zooms out. As you press the air out, move the bag across the classroom so that your students feel the moving air. When the bag is empty again, ask students to explain what happened to the trapped air. Follow this demonstration with a balloon. Show an unfilled balloon, blow in it until it is filled, and then let go! Students will watch the balloon shoot across the classroom, and you can again relate the idea that the trapped air wanted to get out of the balloon so quickly, that it literally pushed the balloon around the room.

Think! Discuss or Write

Why is air important? Make a list of ways that air helps the world: people breath, plants grow, seeds are blown around, etc.

Post Activity:

Do!

A Bottle Cap Made of Air

Provide each student group with an empty water bottle and a few small crumpled paper balls (just small enough to fit through the bottle opening). Tell students that they are going to try different ways of getting the ball into the bottle. Begin with the bottle standing upright and give each team member a chance to get the ball inside the bottle. Drop it in! Lay the bottle on its side, and ask students to scoot in the ball this way. Push it through the opening. Now for the challenge! Keep the bottle on its side and place the ball just inside the lip of the bottle opening. On the count of three, try to blow the ball in. What happens? The ball comes right out! By blowing on the ball, we are trying to force air and the ball into the bottle. Since the bottle is already filled with air, it doesn't want any more air! Pushing the ball in, we displaced only a little air. Our air is sweeping in and pushing the bottle's old air out. That old air pushes the paper ball out of the bottle. The bottle's own air pressure acts as a bottle cap!

Learning Goals Reinforced:

- Air exerts pressure.
- Air takes up space and fills things.

Think! Discuss or Write

What things have more air pressure pushing on them: long, large things, or short, small things? Why do you think that?

Link:

http://kids.earth.nasa.gov/archive/air_pressure/index.html

FIRST GRADE AIR AND WEATHER STUDY

CLASS: AIR AND WEATHER: WIND

Students will learn that wind is caused by differences in air pressure between hot and cold air masses. Students will try to move a variety of objects across their desks with wind created by a fan.

Pre Activity:

Do!

Pretty Pinwheels

Provide students with a pinwheel template on white paper (see below). Allow students to color the pinwheel template, front and back, before instructing them to cut. When ready, show students how to fold and connect the pinwheel onto a straw with a thumbtack. Let students admire their artwork for a moment, and then ask them to predict what will happen when they blow on the pinwheel. Encourage students to blow from the front and from the side of the pinwheel and compare the movement that those gusts of wind create.

Think! Discuss or Write

Look outside. Is the wind blowing? How do you know? Ask students to list the signs they can see outside the window.

Post Activity:

Do!

Wind Paintings

We know that moving air can push many things around. In this art lesson, provide students with a sheet of paper and a straw. Put a large drop of 1, 2, or 3 different tempera paints (slightly diluted with water) wherever students like on the paper. Next, instruct students to paint with their straw paintbrushes! Gently blow through the straw and move the wet paint over the paper to make gorgeous wind-like designs. Please watch to make sure that the straw paintbrushes stay out of the paint, showing students to blow with the straw opening about 1-2 inches above the paper!

Learning Goals Reinforced:

- Moving air is called wind.
- Wind is powerful enough to push or move things.

Think! Discuss or Write

What important jobs does wind do for our world? Make a list of ways wind helps us. Follow up by asking students to list problems caused by wind.

Link:

http://www.need.org/needpdf/infobook_activities/ElemInfo/WindE.pdf

FIRST GRADE AIR AND WEATHER STUDY

CLASS: AIR AND WEATHER: WATER CYCLE

Students will learn that Earth's water is a valuable resource that has been recycled for millions of years. Students will engage in hands-on activities that demonstrate different steps of the water cycle.

Pre Activity:

Do!

Make a Water Cycle Gauge

Get a tall (10cm) glass or plastic jar with a side opening. A clear tennis ball can or a tall jam jar would be ideal. Explain to students that you will be making a tool to help measure how much rain we have in our neighborhood: a water cycle gauge! Have students watch and help as you drop 5 marbles or pebbles at the bottom of the gauge so that the container won't blow away! Fill the bottom of the gauge with water so that the pebbles are covered. Draw a line with a dark marker to mark the starting water level. Leave the water cycle gauge in an open area outside for a week. Ask students to predict what the water cycle gauge will look like: the same or different from last week. Check to see if it has collected any rain or if the water level is lower than where we started! Record your class observations. If the water level is higher, explain why. If the water level is lower, ask students to explain what might have happened. Place the water cycle gauge outside every week, or at different times of year to help students notice the difference between our wet and dry seasons.

Think! Discuss or Write

Where does rain come from? How do you think it gets up there in the sky?

Post Activity:

Do!

Water Cycle Song

Sing and act the Water Cycle Song. (To the tune of "Oh My Darling Clementine")

Evaporation (bring your fingers from the floor to over your head)

Condensation (create a cloud by locking your fingers over your head)

Precipitation (bring your fingers back down to the floor, "sprinkling" rain)

On my mind (point to your head)

Oh it's called the water cycle, (make a circle with your finger in front of you)

and it happens all the time. (point to your wrist, as if wearing a watch)

Learning Goals Reinforced:

- Evaporation, Condensation, and Precipitation are the three major stages of the water cycle.
- Water changes states.
- Water is constantly moving in a cycle, being recycled over and over again.

Think! Discuss or Write

Does water still evaporate in the wintertime, even though it is cold outside? Why do you think that still happens?

Link:

http://www.actewagl.com.au/education/_lib/Flash/Water_cycle/water.swf

FIRST GRADE AIR AND WEATHER STUDY

CLASS: AIR AND WEATHER: STORMS

Students will learn that static electricity creates lightning. Students will experiment with static electricity before being introduced to the van de graaff generator and its amazing electrical displays.

Pre Activity:

Do!

Stormy Poetry

What sounds do you hear on a stormy night? What do you see on a stormy night? How do you feel on a stormy night? Create a simple class poem using those sounds, images and feelings. Read the poem as a class, perhaps adding movement to create a dramatic, stormy performance.

Think! Discuss or Write

What do you do on a rainy or stormy day? Have students describe good activities for bad weather days.

Post Activity:

Do!

A Rain Orchestra

Lead students as they create their own rain storm in the darkened classroom, using just their bodies (and maybe a light switch for extra dramatic effect!) As the teacher tells the rainy day story, have students follow his or her motions to make the rain storm come alive. Turn the lights off before you begin the rain story.

It all begins on a windy day. (Have students rub hands together slowly.)

The wind begins to blow hard. (Rub hands together quickly.)

Suddenly, big rain drops begin to drop from the sky. (Snap fingers slowly, then quicken the pace.)

Can you hear the rain drops coming faster and harder? (Clap hands for downpour!)

Oh no! It's pouring! And what's that I hear? Thunder! (Stomp your feet once and yell boom!)

Continue to clap for rain.)

After thunder, you know lightning will be coming next. (Flick classroom lights.)

(Repeat the thunder and lightning pattern a few times. When ready, make the storm pass.)

Just like any storm, I think this storm is going away. (Begin snapping fingers quickly.)

It seems like there are just a few drops left. (Snap fingers slowly.)

There's the quiet wind again. (Rub palms together.)

And, look, the sun comes out. It's a nice quiet day again. (Turn lights back on.)

Learning Goals Reinforced:

- Storms often involve wind, rain, and electricity.
- You can listen for signs of storms, even those that are far away.

Think! Discuss or Write

Ask students to think about storm safety. Create a list of ways to stay safe during a thunder and lightning storm.

Link:

<http://www.weatherwizkids.com/weather-lightning.htm>

FIRST GRADE AIR AND WEATHER STUDY

A Pretty Pinwheel

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

from: http://rubberstamping.about.com/od/projects/ss/Pinwheel_2.htm